

6

Science Standard
6.5.c.



Energy: Pass It On!

California Education and the Environment Initiative

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The Education and the Environment Curriculum is a cooperative endeavor of the following entities:

California Environmental Protection Agency
California Natural Resources Agency
Office of the Secretary of Education
California State Board of Education
California Department of Education
California Integrated Waste Management Board

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Key Partners:

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Lesson 4 Cause and Effect?

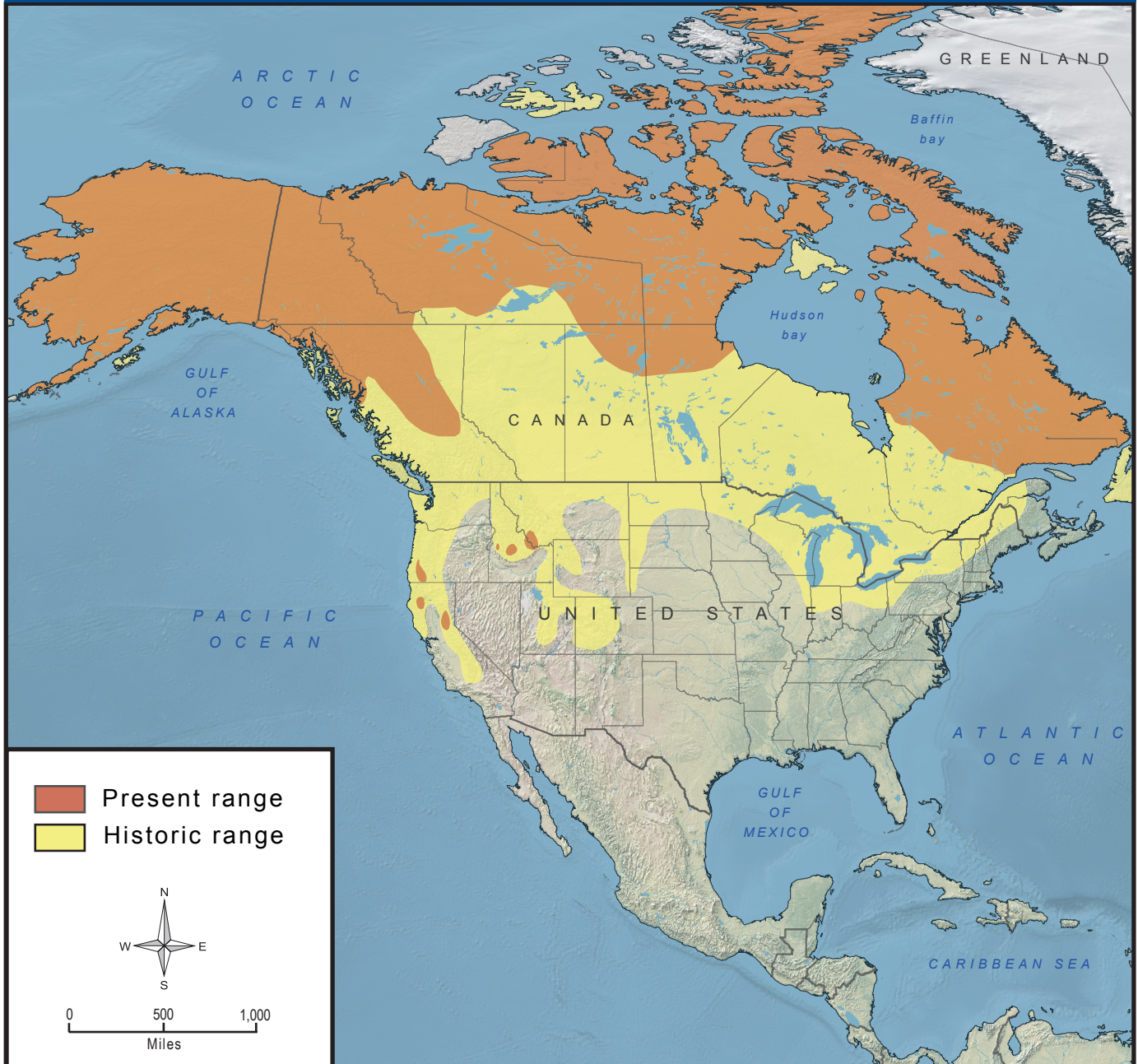
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VA #1 Wolverine in Its Habitat

VA #2 Wolverine Distribution Map



VA #3 Organisms and Their Functions

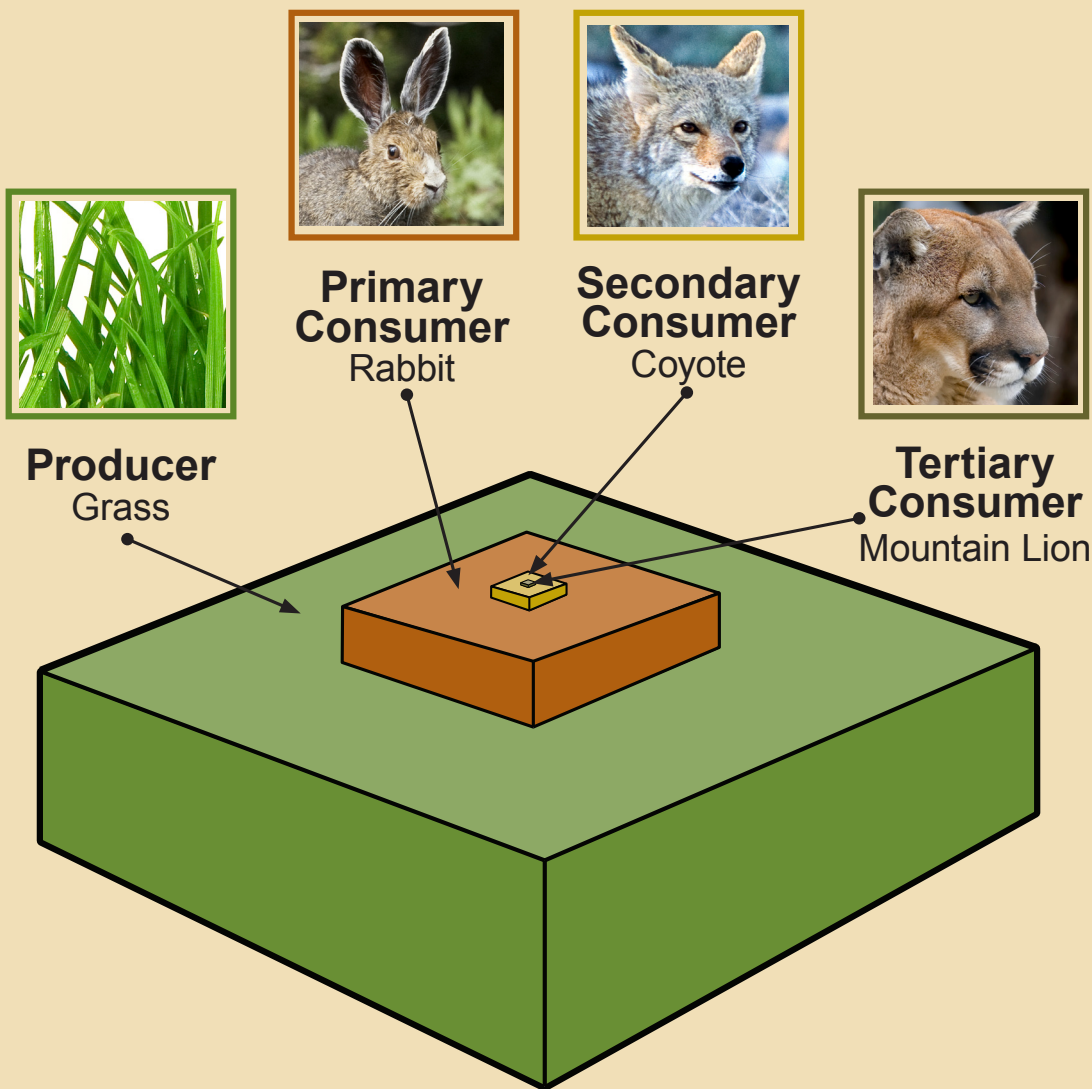
Description of Function	Organism
_____ 1. An organism that gets its energy and materials by breaking down the remains of dead organisms and absorbing the nutrients.	a. bacteria
_____ 2. An organism whose primary food source is plants.	b. carnivore
_____ 3. An organism, such as a plant or alga, that uses light energy or chemical energy to produce food (sugars or starches).	c. consumer
_____ 4. A one-celled producer with no nucleus.	d. decomposer
_____ 5. An organism that eats both plants and animals.	e. herbivore
_____ 6. An organism that obtains energy and materials by eating other organisms.	f. omnivore
_____ 7. An organism that eats dead organisms.	g. producer
_____ 8. An organism whose primary food source is other animals.	h. scavenger

VA #4 Roles in an Ecosystem

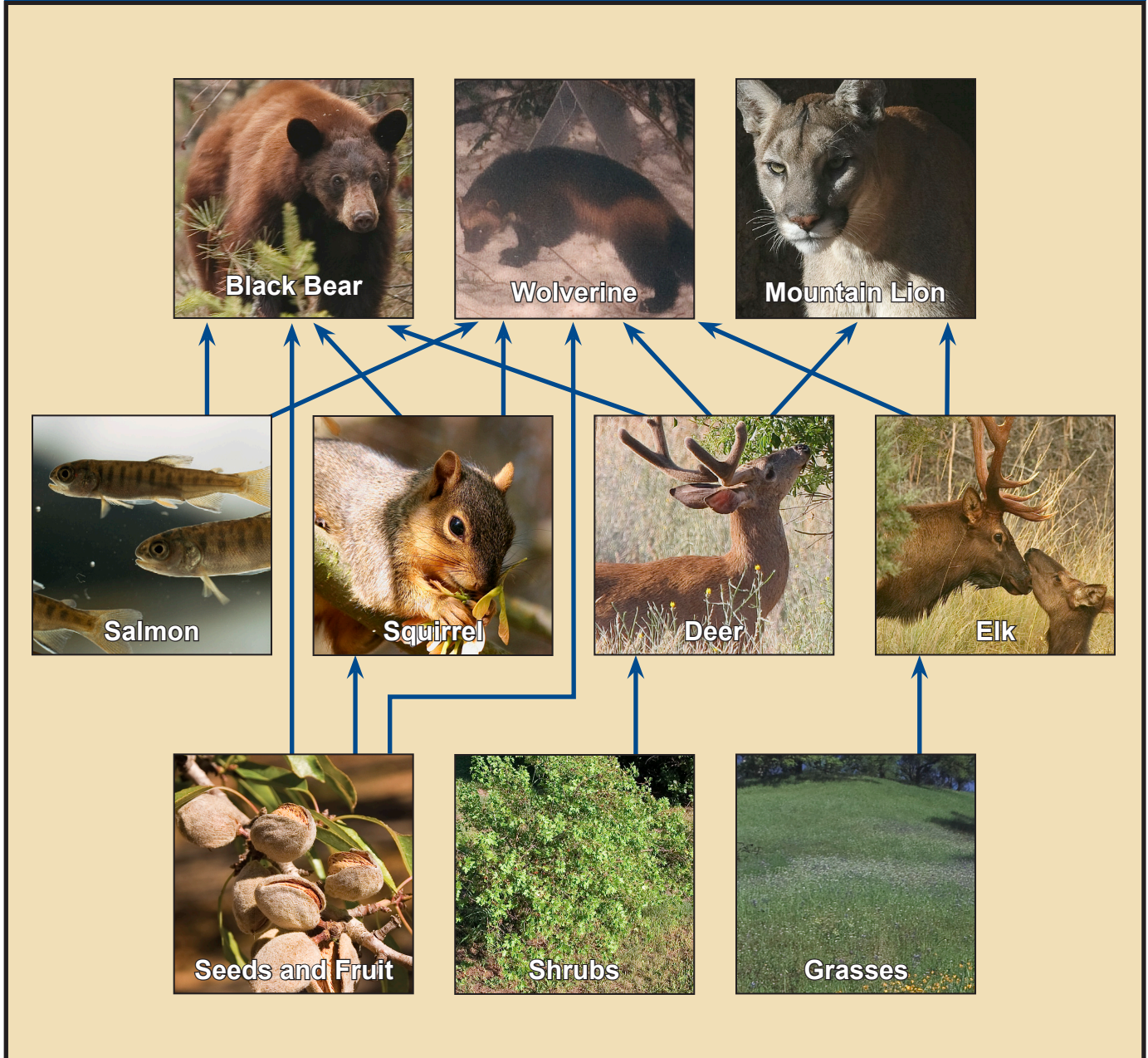
Natural Region:		High Desert	North Coastal Forests (Redwoods)	Oak Woodlands
Role in the Ecosystem		Examples of Populations of Organisms		
Producers				
Consumers	Herbivores			
	Carnivores			
	Omnivores			
	Scavengers			
Decomposers				

VA #5 Sierra Nevada Energy Pyramid

90% Energy Loss at Each Trophic Level



VA #6 Partial Wolverine Ecosystem Food Web



VA #7 Part 1: Timber Harvesting 1

Byproduct or change to natural system caused by human practice	Is this a byproduct (B) or a change (C)?	Effects on the natural system
<i>Logging debris (unused stems and limbs)</i>	<i>B</i>	<i>It returns nutrients to the soil, allowing new plants to grow. It can also provide shelter and nesting sites.</i>
<i>Eroded soil that goes into streams (if harvesting and road building takes place near a stream)</i>	<i>B</i>	<i>Sediment changes water quality in streams. This can harm fish and other aquatic life.</i>
<i>Old trees are removed</i>	<i>C</i>	<i>It can remove habitat from animals that live or eat food from old trees. It reduces fuel in forests so that wildfires are not too hot and thus do not cause as much soil erosion and harm plants and animals.</i>

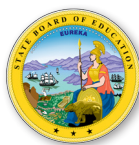
VA #8 Part 1: Timber Harvesting 2

Byproduct or change to natural system caused by human practice	Is this a byproduct (B) or a change (C)?	Effects on the natural system
<i>More light reaches forest floor</i> <hr/> <hr/>	C	<i>Plants that need light will grow well.</i> <hr/> <i>Plants that need shade will not grow well.</i> <hr/> <i>The mix of herbivores will change depending on which plants grow there.</i> <hr/> <i>Animals that need plants for protection will move away until more plants grow.</i> <hr/>
<i>Compacted soil as harvesting equipment moves around</i> <hr/> <hr/>	C	<i>The roots of many plants cannot grow well in compacted soil.</i> <hr/> <hr/> <hr/> <hr/>
<i>Roads are built</i> <hr/> <hr/>	C	<i>Roads can divide habitat, preventing wildlife breeding. It can make it harder for certain species to have enough range to hunt. Some animals get killed crossing roads.</i> <hr/> <hr/>

VA #9 Part 2: Timber Harvesting

What is your recommendation regarding your scenario? Why?

Example: I recommend the timber harvesting be allowed. This will reduce fire risks to the area, protecting many species. It will also supply employment to people. Harvesting should only be allowed if it stays away from water resources, because species in streams can be harmed by sediment that comes from harvesting and road building. Foresters should also avoid compacting the soil as much as possible.



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